EXHIBIT J

Exhibit F-04 to Defendants' Invalidity Contentions:
Comparison of U.S. Patent No. 9,154,354 and Cai

As described in the following claim chart, claims 10, 11, and 12 ("asserted claims") of U.S. Patent No. 9,154,354 ("the '354 Patent") are invalid under 35 U.S.C. §§ 102 and/or 103 in view of U.S. Patent No. 6,205,410 to Cai ("Cai").

Cai issued on March 20, 2001 from an application filed on October 13, 1998, and therefore constitutes prior art to the '354 Patent under at least pre-AIA 35 U.S.C. §§ 102(a), (b) or (e).

To the extent that Cai is found not to anticipate one or more of the asserted claims of the '354 Patent, those claims are obvious in view of Cai alone or in combination with the knowledge of a POSITA and/or with other prior art references, including, without limitation, one or more references identified in Exhibits F-01 through F-03 and F-05 through F-07 to Defendants' Invalidity Contentions. Defendants' Invalidity Contentions provide additional details regarding the motivation to combine Cai and the references cited in those exhibits.

CommScope notes that while certain potential obviousness arguments and/or combinations may be cited within these charts, such recitations are not meant to be exhaustive. As such, to the extent that any asserted claims are found not to be anticipated by the reference herein, defendants reserve the right to argue that such non-anticipated claims are obvious over the reference alone, in view of the ordinary skill in the art at the time of the alleged invention, in view of any of the arguments and/or prior art identified in the cover pleading or any exhibits thereto, and/or in combination with other charts provided herewith.

Claim construction is yet to occur, fact discovery is ongoing, and the invalidity of the asserted claims will likely be the subject of expert discovery. Thus, this chart should not suggest CommScope's adoption of or acquiescence in any claim scope and/or claim construction positions taken by TQ Delta in its infringement contentions or elsewhere. This chart is intended to set forth CommScope's contentions, not all of the evidence that may support such contentions. Where this chart states that a reference discloses any aspect of the claimed invention, the disclosure may be either express or inherent. The cited passages are illustrative and not intended to be exhaustive. Further, citations to any figure, table, or chart is also meant to encompass the language describing the respective figure, table, or chart; and vice-versa. CommScope reserves the right to rely on other documents or passages providing comparable evidence of how Cai alone or in combination with the knowledge of a POSITA and/or other prior art references renders the asserted claims of the '354 Patent invalid.

U.S. Pat. No. 9,154,354 , Claim 10	**Cai**
10.pre. A multicarrier communications transceiver operable to:	CommScope does not concede that the preamble is limiting. To the extent it is limiting, Cai discloses and/or renders obvious a multicarrier communications transceiver. *See, e.g.*:

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U.S. Pat. No. 9,154,354 , Claim 10	Cai
	Cai, at Abstract: "A system and method which establishes an optimum margin for each channel in a discrete multi-tone (DMT) transceiver." Cai, at 1:13-16: "This invention relates to the field of discrete multi-tone (DMT) data communication, and, more particularly, to the field of optimization of the signal-to-noise ratio margin of DMT channels." Cai, at 3:19-24: "It is understood that the functionality of the transmitter 103 and receiver 106 are generally combined in a single DMT modem so that it may transmit and receive data communication to and from other modems and that the transmit and receive functions are shown individually herein for purposes of illustration and clarity." Furthermore, this limitation would have been obvious in light of Cai alone or in combination with the knowledge of a POSITA and/or the references identified in Exhibits F-01 through F-03 and F-05 through F-07 relating to this limitation. The Invalidity Contentions describe the motivations to combine Cai and those references.
10.a. receive a multicarrier symbol comprising a first plurality of carriers	Cai discloses and/or renders obvious a transceiver operable to receive a multicarrier symbol comprising a first plurality of carriers. *See, e.g.*: Cai, at 2:14-21: "In accordance with another aspect of the present invention, a method is provided for establishing the bit loading configuration of a discrete multi-tone (DMT) transceiver comprising the steps of determining a variation in a signal-to-noise ratio for each of the channels, and, determining bit loading configuration for each of the

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	channels based on the a variation in the signal-to-noise ratio for each of the channels." Cai, at 3:7-13: "However, the SNR margins employed vary from channel to channel, depending upon the potential SNR variation experienced during the connection. . . The varying margins allow the DMT channels to be used with a maximum of efficiency, while ensuring a low bit error rate." Cai, at Fig. 2:

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	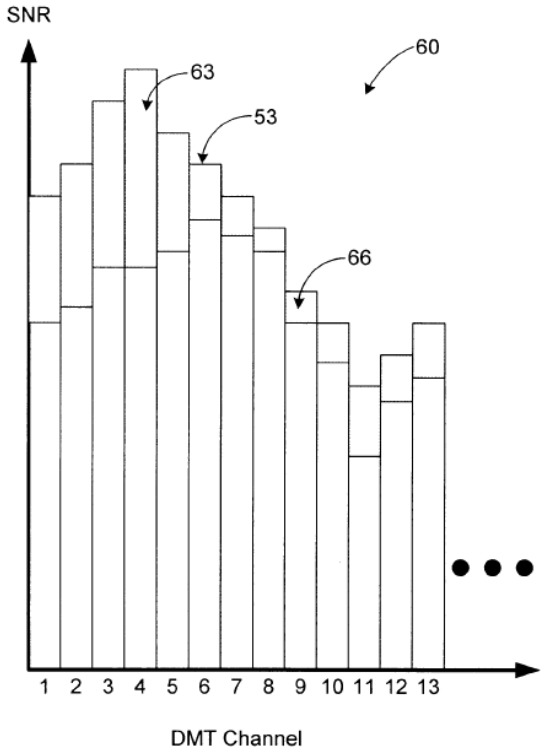 **Fig. 2** Cai, at 3:45-50: "The noise estimation block 149 provides outputs to both a signal-to-noise variation storage block 153 and a bit loading block 156. The bit loading block 156 provides bit allocation information to a bit allocation table 166 and tone scaling information to a tone scaling table 169." Furthermore, this limitation would have been obvious in light of Cai alone or in

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	combination with the knowledge of a POSITA and/or the references identified in Exhibits F-01 through F-03 and F-05 through F-07 relating to this limitation. The Invalidity Contentions describe the motivations to combine Cai and those references.
10.b. and a second plurality of carriers	Cai discloses and/or renders obvious a second plurality of carriers. *See, e.g.*: Cai, at 5:15-20: "In particular, the parameters include an overall margin γ_0 which is set to 0 dB, a total number of used DMT channels used which is set equal to the actual number of DMT channels which is 256 in the preferred embodiment, and a total bit rate b0 which is an assumed bit rate of the DMT modem 200 (FIG. 4)." Cai, at 5:58-64: "If the overall margin γ_0 is stabilized, then the bit allocation logic 223 proceeds to block 269 in which the calculated bit rate b'(i) for each of the DMT channels are truncated to the nearest integer toward zero so that b(i)=[b'(i)]." Cai, at 6:19-23: Once the bit allocation for the DMT channels is finally determined in block 276, the bit allocation logic 223 proceeds to block 276 in which the signal-to-noise ratio required for each DMT channel in light of the supplementation of block 279. *See also*, 10.a. Furthermore, this limitation would have been obvious in light of Cai alone or in combination with the knowledge of a POSITA and/or the references identified in Exhibits F-01 through F-03 and F-05 through F-07 relating to this limitation. The Invalidity Contentions describe the motivations to combine Cai and those references.

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10.c. receive a first plurality of bits on the first plurality of carriers using a first SNR margin;	Cai discloses and/or renders obvious receiving a first plurality of bits on the first plurality of carriers using a first SNR margin. *See, e.g.*: Cai, at 1:43-50: "After the signal-to-noise ratio is measured for each channel, it is a typical practice to subtract a common margin, typically 6 dB, from the measured signal-to-noise ratio of each channel to obtain a transmission signal-to-noise ratio at which to achieve a bit error rate of approximately 10^{-7}. An appropriate bit rate is assigned to the channel based upon the transmission signal-to-noise ratio obtained." Cai, at 2:14-21: "In accordance with another aspect of the present invention, a method is provided for establishing the bit loading configuration of a discrete multi-tone (DMT) transceiver comprising the steps of determining a variation in a signal-to-noise ratio for each of the channels, and, determining bit loading configuration for each of the channels based on the a variation in the signal-to-noise ratio for each of the channels." Cai, at 3:7-13: "However, the SNR margins employed vary from channel to channel, depending upon the potential SNR variation experienced during the connection. . . The varying margins allow the DMT channels to be used with a maximum of efficiency, while ensuring a low bit error rate." *See also*, 10.a.-b. Furthermore, this limitation would have been obvious in light of Cai alone or in combination with the knowledge of a POSITA and/or the references identified in Exhibits F-01 through F-03 and F-05 through F-07 relating to this limitation. The Invalidity

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	Contentions describe the motivations to combine Cai and those references.
10.d. receive a second plurality of bits on the second plurality of carriers using a second SNR margin;	Cai discloses and/or renders obvious receiving a second plurality of bits on the second plurality of carriers using a second SNR margin. *See, e.g.*: Cai, at 1:43-50: "After the signal-to-noise ratio is measured for each channel, it is a typical practice to subtract a common margin, typically 6 dB, from the measured signal-to-noise ratio of each channel to obtain a transmission signal-to-noise ratio at which to achieve a bit error rate of approximately 10^{-7}. An appropriate bit rate is assigned to the channel based upon the transmission signal-to-noise ratio obtained." Cai, at 2:14-21: "In accordance with another aspect of the present invention, a method is provided for establishing the bit loading configuration of a discrete multi-tone (DMT) transceiver comprising the steps of determining a variation in a signal-to-noise ratio for each of the channels, and, determining bit loading configuration for each of the channels based on the a variation in the signal-to-noise ratio for each of the channels." Cai, at 3:7-13: "However, the SNR margins employed vary from channel to channel, depending upon the potential SNR variation experienced during the connection. . . The varying margins allow the DMT channels to be used with a maximum of efficiency, while ensuring a low bit error rate." Cai, at 4:38-50: "The SNR estimate is determined at startup or during data communication by

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	transmitting a tone at the center frequency of each DMT channel and the SNR estimate is determined. The SNR variation is stored in memory and is updated over time during multiple uses of the data link 100. The actual distribution of the data input 113 among the multiple DMT channels by the bit allocation block 116 is performed pursuant to the bit allocation table 166. Likewise, the actual tone scaling performed on each DMT channel by the tone scaling block 123 is performed pursuant to the tone scaling table 169." Cai, at Fig. 5:

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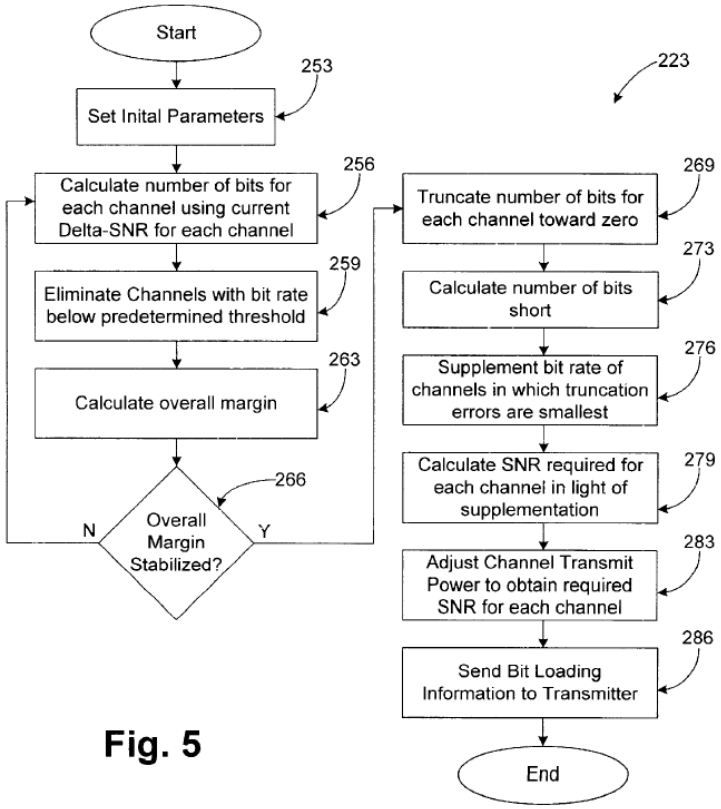
U.S. Pat. No. 9,154,354 , Claim 10	Cai
	 **Fig. 5** *See also*, 10.a.-c. Furthermore, this limitation would have been obvious in light of Cai alone or in combination with the knowledge of a POSITA and/or the references identified in Exhibits F-01 through F-03 and F-05 through F-07 relating to this limitation. The Invalidity Contentions describe the motivations to combine Cai and those references.
10.e. wherein the first plurality of	Cai discloses and/or renders obvious wherein the first plurality of carriers is different than

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carriers is different than the second plurality of carriers,	the second plurality of carriers. *See, e.g.*: Cai, at 1:43-50: "After the signal-to-noise ratio is measured for each channel, it is a typical practice to subtract a common margin, typically 6 dB, from the measured signal-to-noise ratio of each channel to obtain a transmission signal-to-noise ratio at which to achieve a bit error rate of approximately 10^{-7}. An appropriate bit rate is assigned to the channel based upon the transmission signal-to-noise ratio obtained." Cai, at 2:14-21: "In accordance with another aspect of the present invention, a method is provided for establishing the bit loading configuration of a discrete multi-tone (DMT) transceiver comprising the steps of determining a variation in a signal-to-noise ratio for each of the channels, and, determining bit loading configuration for each of the channels based on the a variation in the signal-to-noise ratio for each of the channels." Cai, at 3:7-13: "However, the SNR margins employed vary from channel to channel, depending upon the potential SNR variation experienced during the connection. . . The varying margins allow the DMT channels to be used with a maximum of efficiency, while ensuring a low bit error rate." *See also*, 10.a.-d. Furthermore, this limitation would have been obvious in light of Cai alone or in combination with the knowledge of a POSITA and/or the references identified in Exhibits F-01 through F-03 and F-05 through F-07 relating to this limitation. The Invalidity

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	Contentions describe the motivations to combine Cai and those references.
10.f. wherein the first SNR margin is different than the second SNR margin,	Cai discloses and/or renders obvious wherein the first SNR margin is different than the second SNR margin. *See, e.g.*: Cai, at 3:6-13: "Turning then, to FIG. 2, shown is a graph 60 which details the SNR of the channels of a DMT data link according to the present invention. Once again, for each DMT channel, a measured SNR 53 is shown. However, the SNR margins employed vary from channel to channel, depending upon the potential SNR variation experienced during the connection. For example, a large margin 63 is used in channel 4, whereas a small margin 66 is used for channel 9. The varying margins allow the DMT channels to be used with a maximum of efficiency, while ensuring a low bit error rate." *See also*, 10.a.-e. Furthermore, this limitation would have been obvious in light of Cai alone or in combination with the knowledge of a POSITA and/or the references identified in Exhibits F-01 through F-03 and F-05 through F-07 relating to this limitation. The Invalidity Contentions describe the motivations to combine Cai and those references.
10.g. and wherein the first SNR margin provides more robust reception than the second SNR margin	Cai discloses and/or renders obvious wherein the first SNR margin provides more robust reception than the second SNR margin. *See, e.g.*: Cai, at 5:33-43: "[W]here γ_0 is the overall margin and ΔSNR(i) is defined as the variation of the signal-to-noise ratio for each DMT channel. The determination of the signal-to-noise variation ΔSNR(i) is discussed later. Note, however, that the signal-to-noise variation ΔSNR(i) may be employed in other approaches used to calculate the bit

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	allocation, the above equations being an example. The bit allocation logic 223 then proceeds to block 259 in which those DMT channels with a calculated bit rate b'(i) that are less than a predetermined threshold are eliminated from consideration." *See also*, 10.a.-f. Furthermore, this limitation would have been obvious in light of Cai alone or in combination with the knowledge of a POSITA and/or the references identified in Exhibits F-01 through F-03 and F-05 through F-07 relating to this limitation. The Invalidity Contentions describe the motivations to combine Cai and those references.

U.S. Pat. No. 9,154,354 , Claim 11	Cai
11. The transceiver of claim 10, wherein the first SNR margin specifies a first value for an increase in noise associated with the first plurality of carriers.	Cai discloses and/or renders obvious a transceiver wherein the first SNR margin specifies a first value for an increase in noise associated with the first plurality of carriers. *See, e.g.*: Cai, at 1:43-50: "After the signal-to-noise ratio is measured for each channel, it is a typical practice to subtract a common margin, typically 6 dB, from the measured signal-to-noise ratio of each channel to obtain a transmission signal-to-noise ratio at which to achieve a bit error rate of approximately 10^{-7}. An appropriate bit rate is assigned to the channel based upon the transmission signal-to-noise ratio obtained." Cai, at 2:14-21: "In accordance with another aspect of the present invention, a method is provided for establishing the bit loading configuration of a discrete multi-tone (DMT)

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	transceiver comprising the steps of determining a variation in a signal-to-noise ratio for each of the channels, and, determining bit loading configuration for each of the channels based on the a variation in the signal-to-noise ratio for each of the channels." Cai, at 3:7-13: "However, the SNR margins employed vary from channel to channel, depending upon the potential SNR variation experienced during the connection. . . The varying margins allow the DMT channels to be used with a maximum of efficiency, while ensuring a low bit error rate." Cai, at 5:33-43: "[W]here γ_0 is the overall margin and ΔSNR(i) is defined as the variation of the signal-to-noise ratio for each DMT channel. The determination of the signal-to-noise variation ΔSNR(i) is discussed later. Note, however, that the signal-to-noise variation ΔSNR(i) may be employed in other approaches used to calculate the bit allocation, the above equations being an example. The bit allocation logic 223 then proceeds to block 259 in which those DMT channels with a calculated bit rate b'(i) that are less than a predetermined threshold are eliminated from consideration." *See also*, 10.a.-g. Furthermore, this limitation would have been obvious in light of Cai alone or in combination with the knowledge of a POSITA and/or the references identified in Exhibits F-01 through F-03 and F-05 through F-07 relating to this limitation. The Invalidity Contentions describe the motivations to combine Cai and those references.

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U.S. Pat. No. 9,154,354 , Claim 12	Cai
12. The transceiver of claim 10, wherein the second SNR margin specifies a second value for an increase in noise associated with the second plurality of carriers.	Cai discloses and/or renders obvious a transceiver wherein the second SNR margin specifies a second value for an increase in noise associated with the second plurality of carriers. *See, e.g.*: Cai, at 1:43-50: "After the signal-to-noise ratio is measured for each channel, it is a typical practice to subtract a common margin, typically 6 dB, from the measured signal-to-noise ratio of each channel to obtain a transmission signal-to-noise ratio at which to achieve a bit error rate of approximately 10^{-7}. An appropriate bit rate is assigned to the channel based upon the transmission signal-to-noise ratio obtained." Cai, at 2:14-21: "In accordance with another aspect of the present invention, a method is provided for establishing the bit loading configuration of a discrete multi-tone (DMT) transceiver comprising the steps of determining a variation in a signal-to-noise ratio for each of the channels, and, determining bit loading configuration for each of the channels based on the a variation in the signal-to-noise ratio for each of the channels." Cai, at 3:7-13: "However, the SNR margins employed vary from channel to channel, depending upon the potential SNR variation experienced during the connection. . . The varying margins allow the DMT channels to be used with a maximum of efficiency, while ensuring a low bit error rate." Cai, at 5:33-43: "[W]here γ_0 is the overall margin and ΔSNR(i) is defined as the variation of the signal-to-noise ratio for each DMT channel. The determination of the signal-to-noise

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	variation ΔSNR(i) is discussed later. Note, however, that the signal-to-noise variation ΔSNR(i) may be employed in other approaches used to calculate the bit allocation, the above equations being an example. The bit allocation logic 223 then proceeds to block 259 in which those DMT channels with a calculated bit rate b'(i) that are less than a predetermined threshold are eliminated from consideration." *See also*, 10.a.-g. Furthermore, this limitation would have been obvious in light of Cai alone or in combination with the knowledge of a POSITA and/or the references identified in Exhibits F-01 through F-03 and F-05 through F-07 relating to this limitation. The Invalidity Contentions describe the motivations to combine Cai and those references.